IN THE CLAIMS:

Please consider the following claims:

1. (currently amended) A method of determining a compensation signal for the compensation of a temporally varying field strength of the main magnetic field of a main magnet of a magnetic resonance imaging device which also includes at least one gradient field coil for generating a gradient magnetic field, the method comprising:

determining at least one quantity which is characteristic of the temperature-dependent magnetic properties of a magnetizable material ~~which is~~ included as part of the magnetic resonance imaging device and which interacts with the magnetic fields of ~~the~~ such device, the device and its immediate vicinity being substantially steady, and

providing the compensation signal on the basis of said characteristic quantity.

2. (currently amended) A method as claimed in claim 1 wherein the electric signal applied to ~~each~~ said at least one gradient magnetic field coil is determined as one characteristic quantity.

3. (previously presented) A method as claimed in claim 1 wherein the temperature of the magnetizable material is determined as one characteristic quantity.

4. (previously presented) A method as claimed in claim 1 wherein the main magnet includes a main magnetic field coil having a resistance which is not negligibly small with respect to power dissipation, and wherein a further quantity which is characteristic of the temperature-dependent magnetic properties of the magnetizable material is determined from the electric power dissipated in the main magnetic field coil.

5. (previously presented) A method as claimed in claim 1 wherein the compensation signal is provided on the basis of a predetermined functional relationship between the temperature-dependent magnetic properties of the magnetizable material and each relevant characteristic quantity.

6. (previously presented) A method as claimed in claim 5 wherein the relevant functional relationship is recorded in a look-up table, the input parameter of which is a representation of each characteristic quantity whereas its output parameter is a representation of the compensation signal.

7. (previously presented) A method as claimed in claim 1 wherein the device includes an auxiliary magnetic field coil for the compensation of the field strength of the main magnetic field, and further comprising compensating the main magnetic field by generating an auxiliary magnetic field by means of the auxiliary magnetic field coil in conformity with the provided compensation signal.

8. (previously presented) A method as claimed in claim 1 wherein the main magnet includes a main magnetic field coil having a resistance which is not negligibly small with respect to power dissipation, and further comprising compensating the main magnetic field by controlling the electrical energizing of the main magnetic field coil in conformity with the provided compensation signal.

9. (previously presented) A method as claimed in claim 1 wherein the device includes high-frequency (RF) oscillator means for energizing at least one high-frequency (RF) coil, and further comprising adapting during operation the frequency of the RF oscillator means in conformity with the provided compensation signal.

10. (previously presented) A method as claimed in claim 9 wherein the frequency of the RF oscillator means is adapted prior to the application of one or more gradient magnetic field signals.

11. (previously presented) A method as claimed claim 1 wherein the device includes processor-controlled processing means for the processing of an information signal acquired under the influence of the main magnetic field, and further comprising controlling the processing means in conformity with the provided compensation signal in order to provide a compensated information signal.

12. (previously presented) A method as claimed claim 1 wherein variations of the field strength of the main magnetic field are determined and compensated, if necessary, one or more times during an acquisition period.

13. (previously presented) A method as claimed in claim 1 further comprising measuring variations of the field strength of the main magnetic field which are caused by one or more further quantities, including external magnetic fields, atmospheric pressure and mechanical vibrations, and wherein the step of providing further comprises providing the compensation signal from a relevant

functional relationship which represents the effect of the one or more further quantities on the main magnetic field.

14. (previously presented) A device for magnetic resonance imaging comprising:

a receiving space for accommodating an object to be imaged,

a main magnet for generating a main magnetic field in the receiving space,

at least one gradient field coil,

at least one high-frequency (RF) coil,

means for determining at least one quantity which is characteristic of the temperature-dependent magnetic properties of a magnetizable material which is included as part of the magnetic resonance device and which interacts with the magnetic fields of the device,

control means for energizing and controlling the main magnet, the gradient field coil and the RF coil, and

processing means which are actively coupled to the energizing and control means in order to determine a compensation signal for the compensation of a temporally varying field strength of the main magnetic field wherein the processing means are arranged to carry out the method claimed in claim 1.

15. (previously presented) A method as claimed in claim 2 wherein the temperature of the magnetizable material is determined as one characteristic quantity.

16. (previously presented) A method as claimed in claim 15 wherein the main magnet includes a main magnetic field coil having a resistance which is not negligibly small with respect to power dissipation, and wherein a further quantity which is characteristic of the temperature-dependent magnetic properties of the magnetizable material is determined from the electric power dissipated in the main magnetic field coil.

17. (previously presented) A method as claimed in claim 16 further comprising measuring variations of the field strength of the main magnetic field which are caused by one or more further quantities, including external magnetic fields, atmospheric pressure and mechanical vibrations, and wherein the step of providing further comprises providing the compensation signal from a relevant functional relationship which represents the effect of the one or more further quantities on the main magnetic field.

18. (previously presented) A method as claimed in claim 16 wherein the compensation signal is provided on the basis of a predetermined functional relationship between the temperature-

dependent magnetic properties of the magnetizable material and each relevant characteristic quantity.

19. (previously presented) A method as claimed in claim 7 wherein the main magnet includes a main magnetic field coil having a resistance which is not negligibly small with respect to power dissipation, and further comprising compensating the main magnetic field by controlling the electrical energizing of the main magnetic field coil in conformity with the provided compensation signal.

20. (previously presented) A method as claimed in claim 7 wherein the device includes high-frequency (RF) oscillator means for energizing at least one high-frequency (RF) coil, and further comprising adapting during operation the frequency of the RF oscillator means in conformity with the provided compensation signal.